Delta Risk Management Strategy

Public Presentation

June 26, 2007

Rio Vista, California

URS/JBA

Sutter Bypass 97 & Taylor 86

Ref: “Flood Warning -Responding to California Flood Crisis” DWR Jan 2005

RS/JBA

Jones Tract, June 2004

Ref: "Flood Warning -Responding to California Flood Crisis", DWR Jan 2005

URS/JBA

From: Prof. Ray Seed

Sacramento Pocket Area

Ref: "Flood Warning -Responding to California Flood Crisis" DWR Jan 2005

URS/JBA

DRMS - Project Scope

AB-1200 set the General Framework:

- "Risk-Based Evaluation"
- Subsidence, Earthquakes, Floods, Climate Change, "Normal Conditions", & Combination
- Impacts On 50-, 100-, 200-year Projections
- Develop and Comparatively Rate Each Option
- Prevent Disruption of Water Supplies
- Improve Water Quality

URS/JBA

Project Scope (cont.)

- Protect & Enhance Ecosystem
- Assist In Preserving Delta Lands
- Protect The Infrastructure
- Preserve, Protect, Improve Delta Levees
- “Public Safety”

URS/JBA

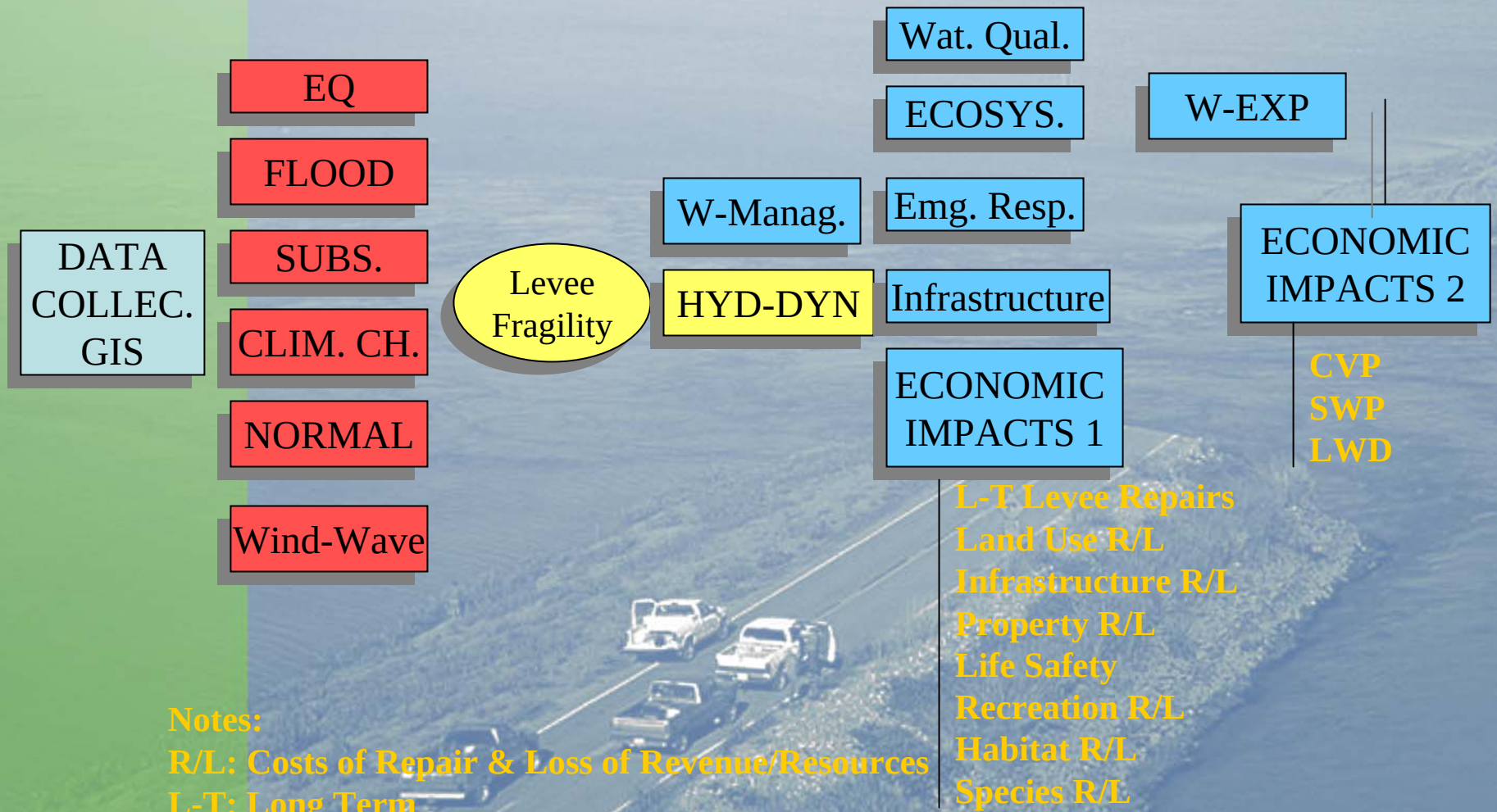
DRMS Deliverable

Phase 1 - Estimate the Risk to the Delta-Suisun Marsh and Affected Regions

Phase 2 - Develop, Rate and Prioritize List of Risk-Reducing/Management Strategies

URS/JBA

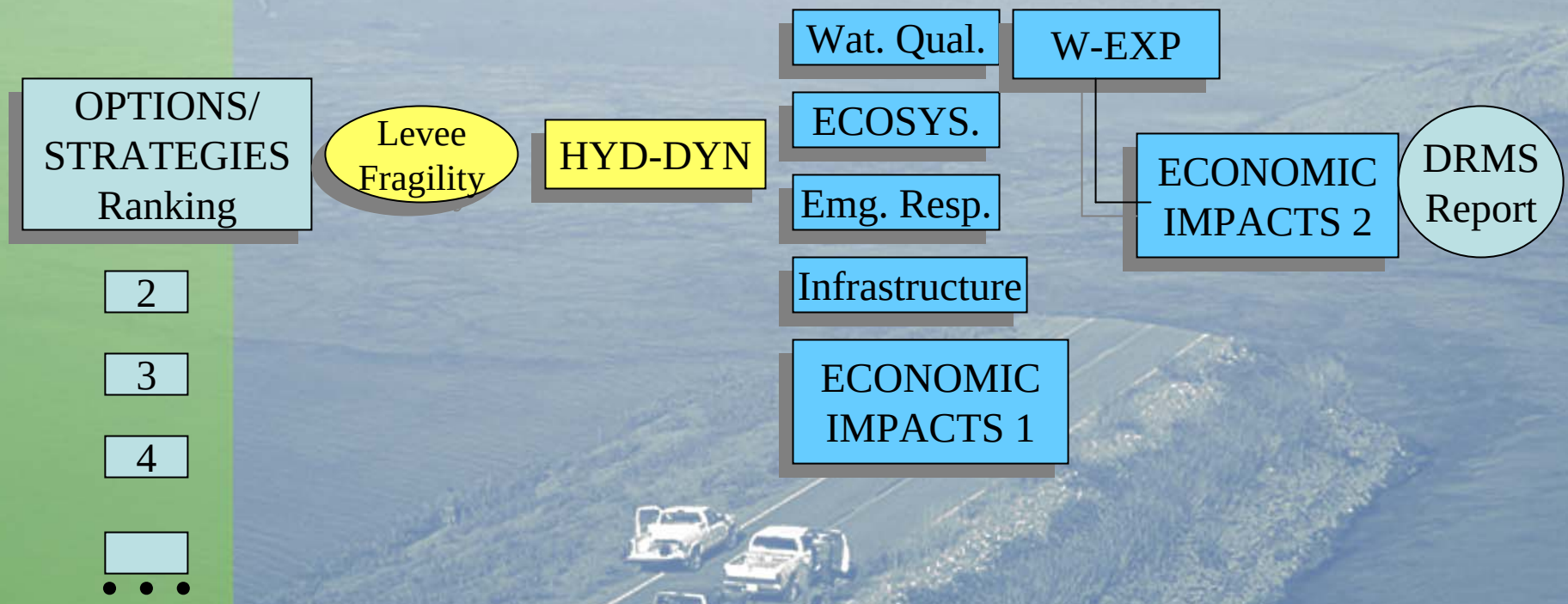
DRMS – Project Activities-Phase 1



Notes:
R/L: Costs of Repair & Loss of Revenue/Resources
L-T: Long Term

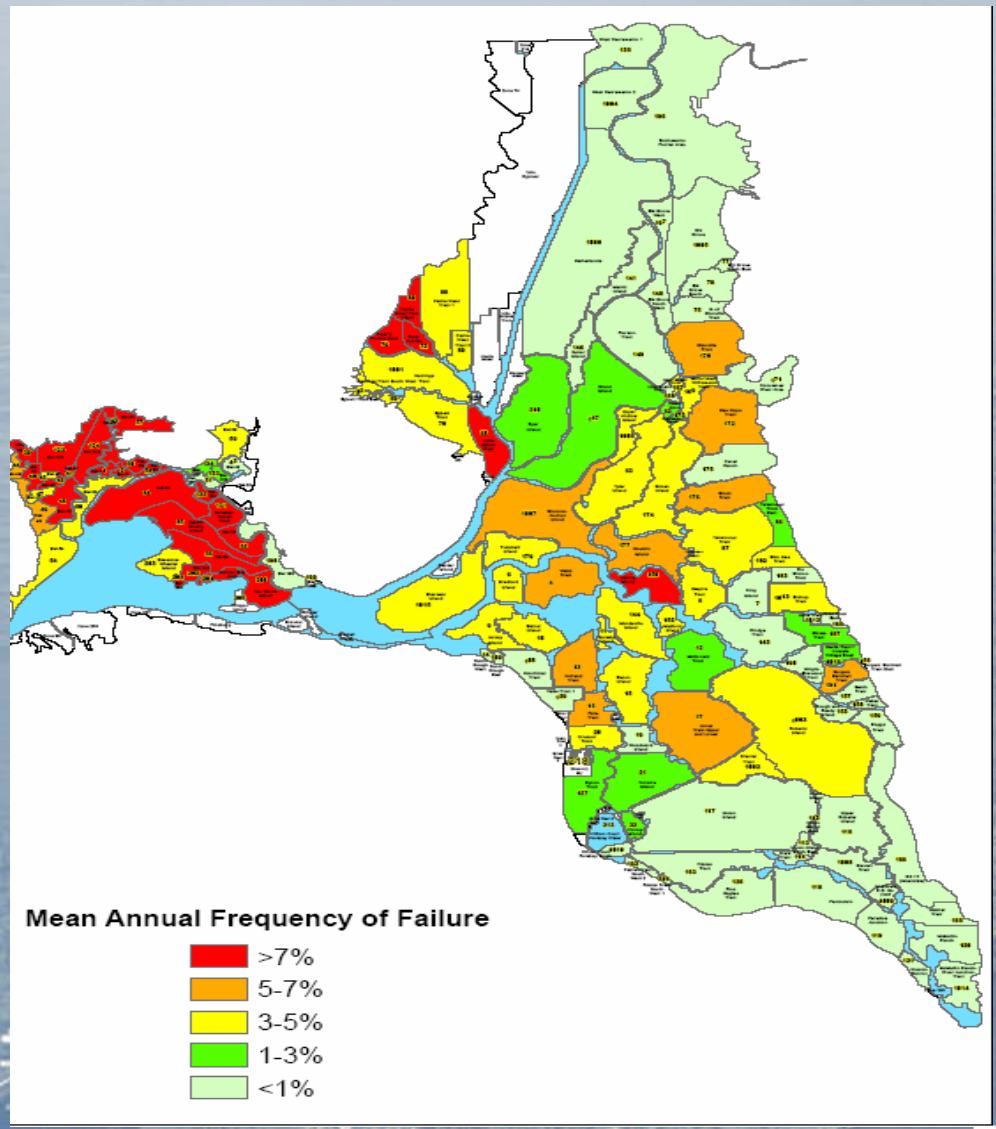
URS/JBA

DRMS – Project Activities- Phase 2



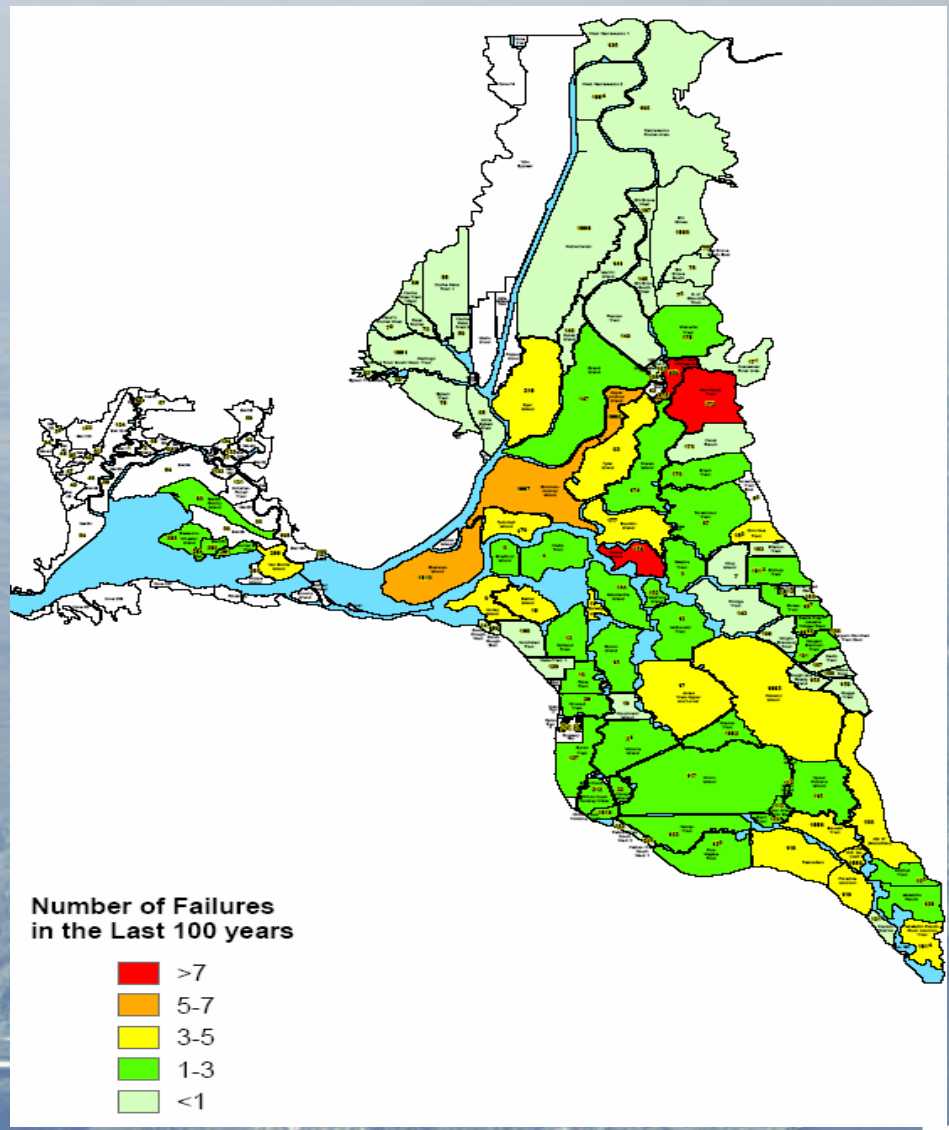
URS/JBA

Expected Annual Frequency of Failures due to Flood Events



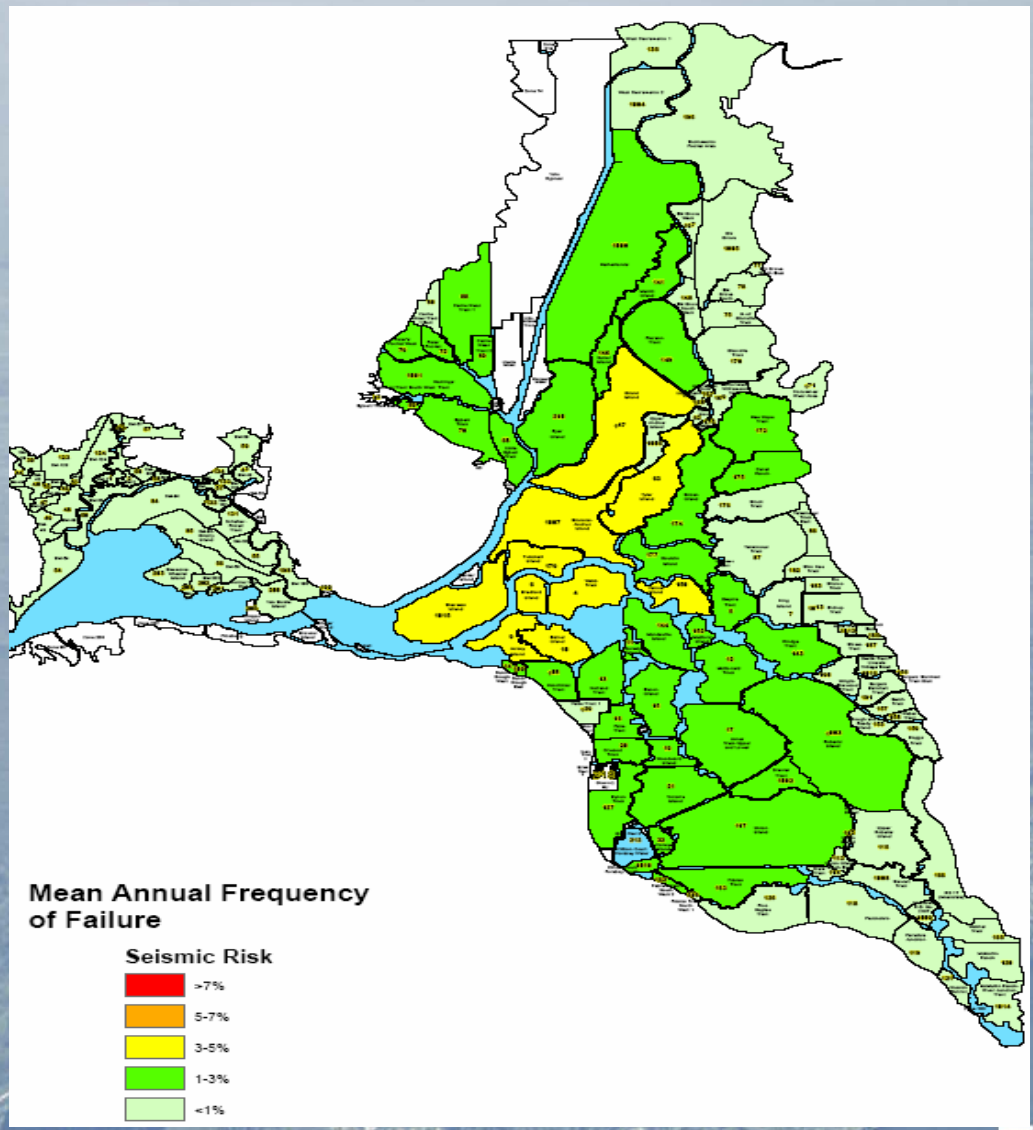
URS/JBA

Historic Failures by Floods in the Last 100 years



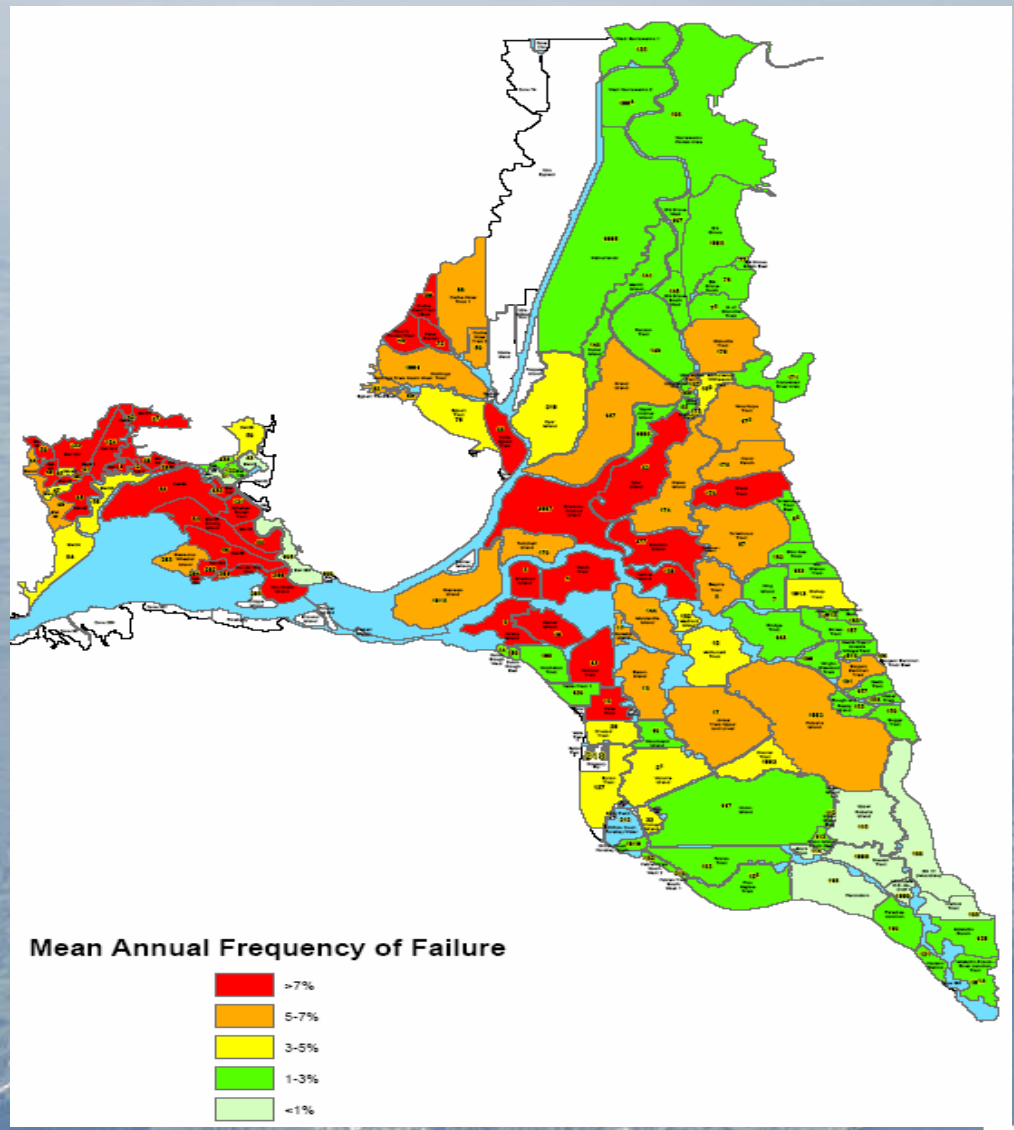
URS/JBA

Expected Annual Frequency of Failures due to Seismic Events



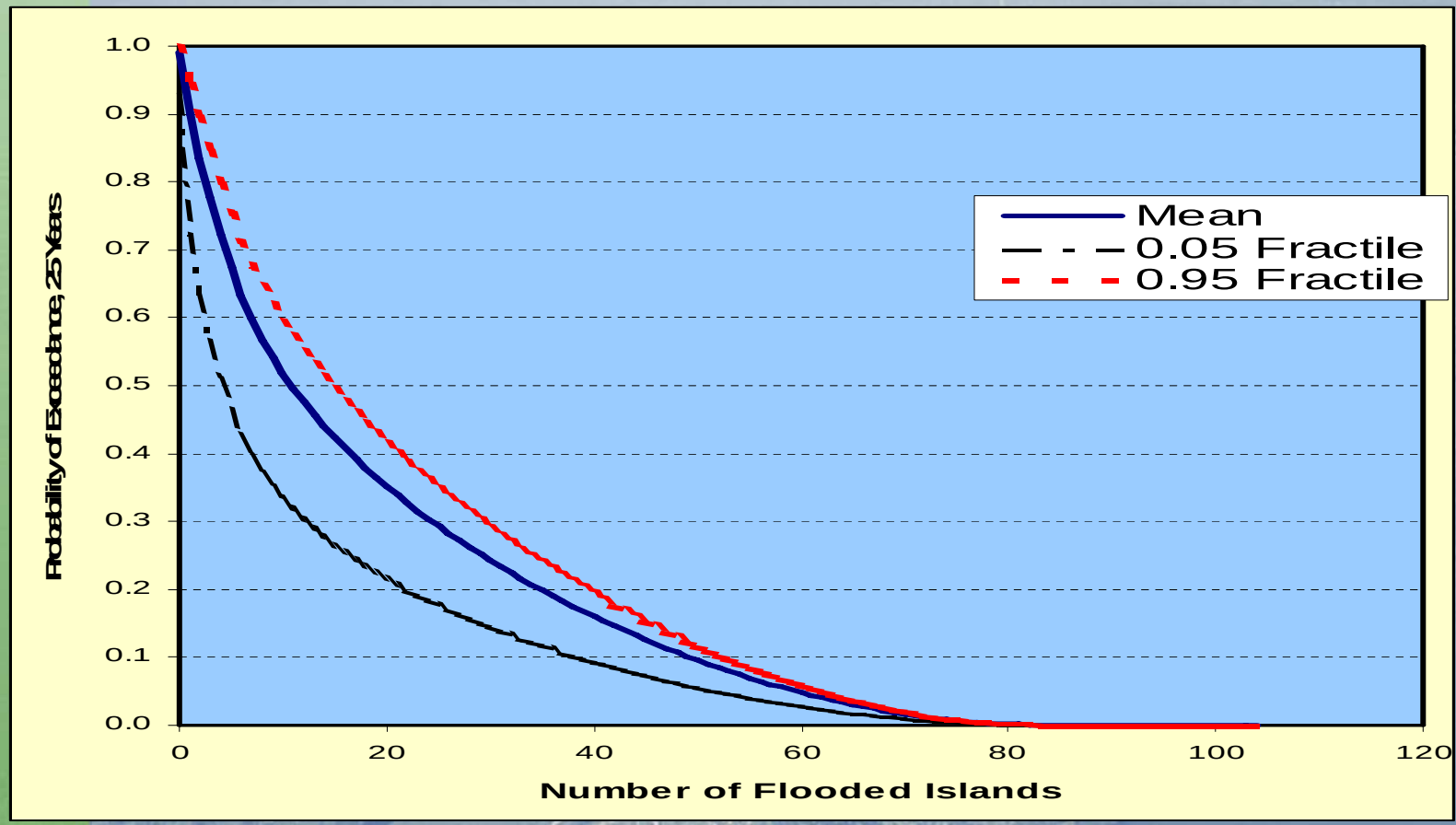
URS/JBA

Expected Annual Frequency of Failures due to Combined Seismic & Flood Events

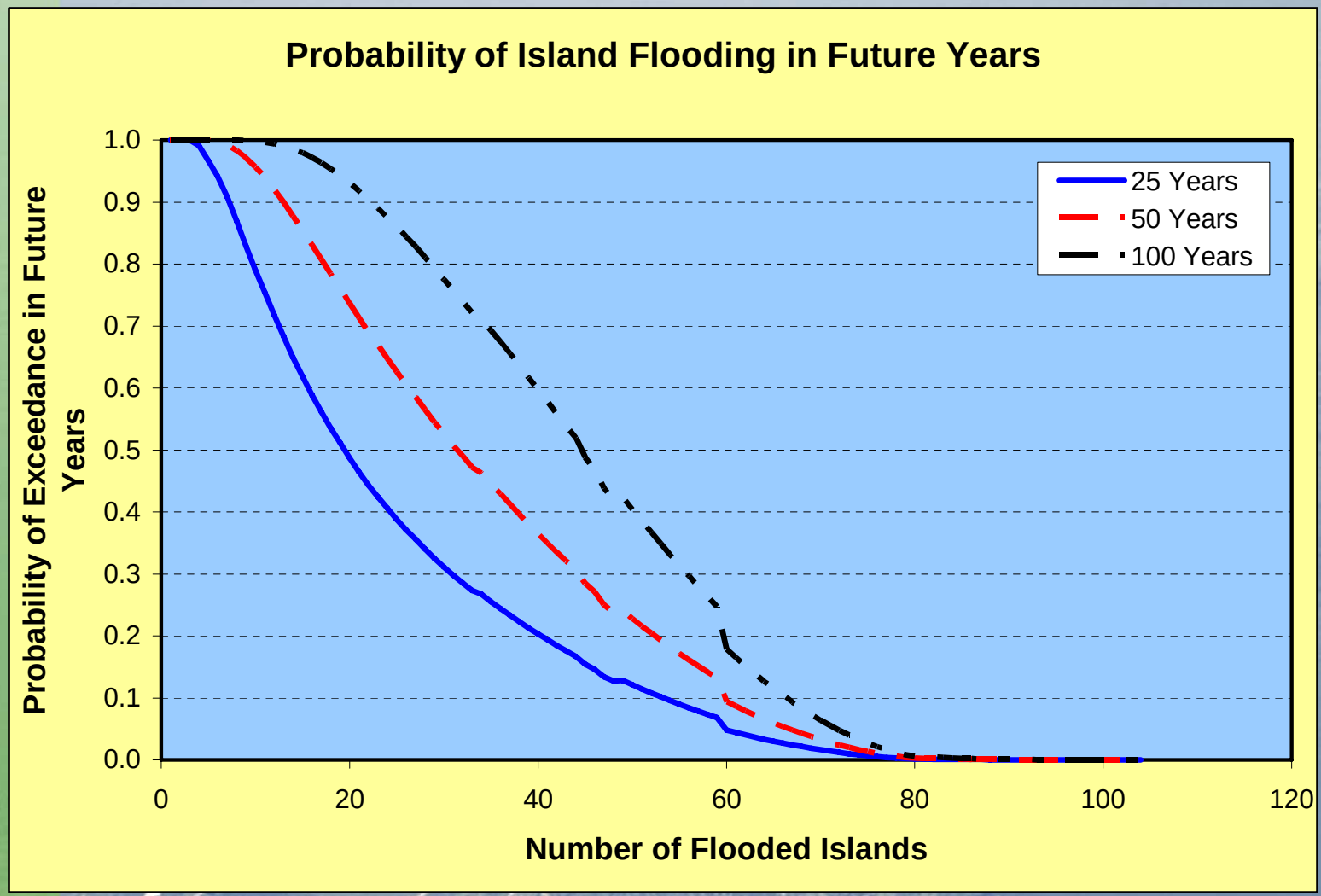


URS/JBA

Probability of Simultaneous Island Failure Due to Seismic Events



URS/JBA


Probability of Island Flooding in Future Years
Probability of Exceedance in Future Years
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
20
40
60
80
100
120
Number of Flooded Islands
25 Years
50 Years
100 Years

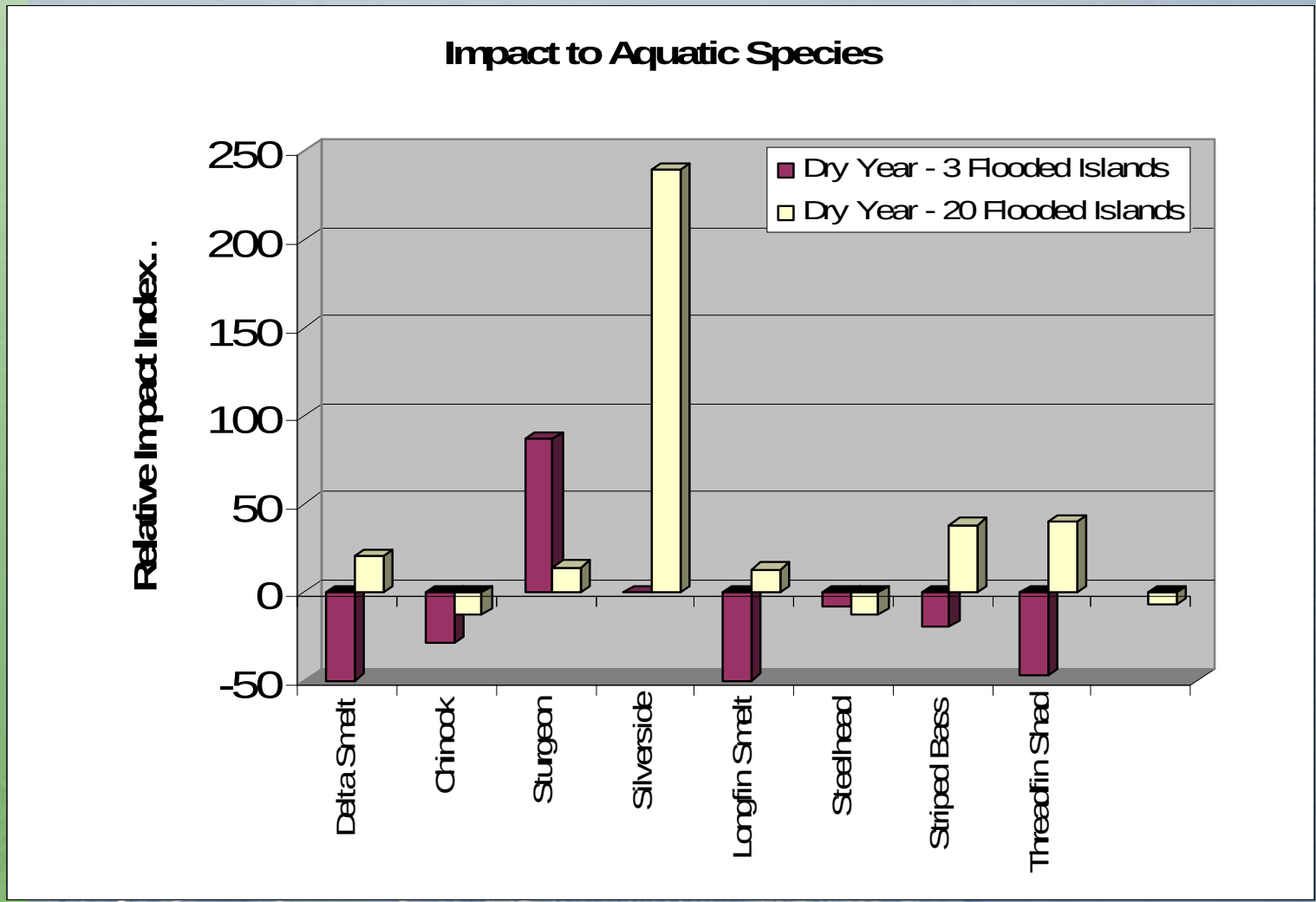
URS/JBA

Repair of Damaged Levees

Analysis Cases (#Flooded Islands, # damaged islands)	**Repair Costs ($B)**	Repair Duration Days (Years)
1 (1 Flooded, 2 Damaged)	1.05	516 (1.4)
2 (3 Flooded, 0 Damaged)	1.80	478 (1.3)
3 (3 Flooded, 4 Damaged)	2.12	596(1.6)
4 (10 Flooded, 0 Damaged)	4.03	1236(3.4)
5 (20 Flooded, 6 Damaged)	6.15	1745 (4.8)
6 (30 Flooded, 6 Damaged)	8.47	2328 (6.4)

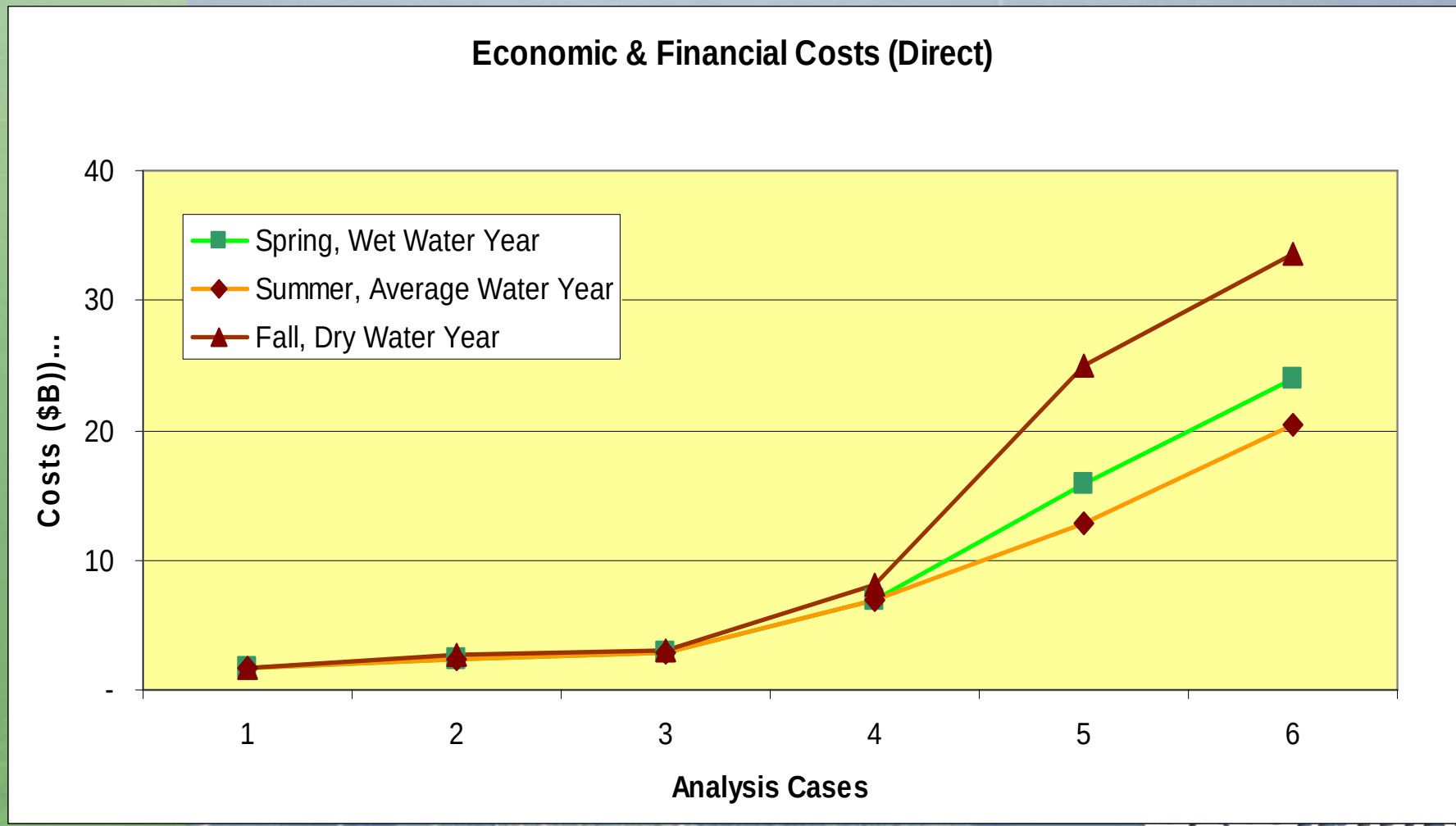
URS/JBA

Expected Ecological Impacts

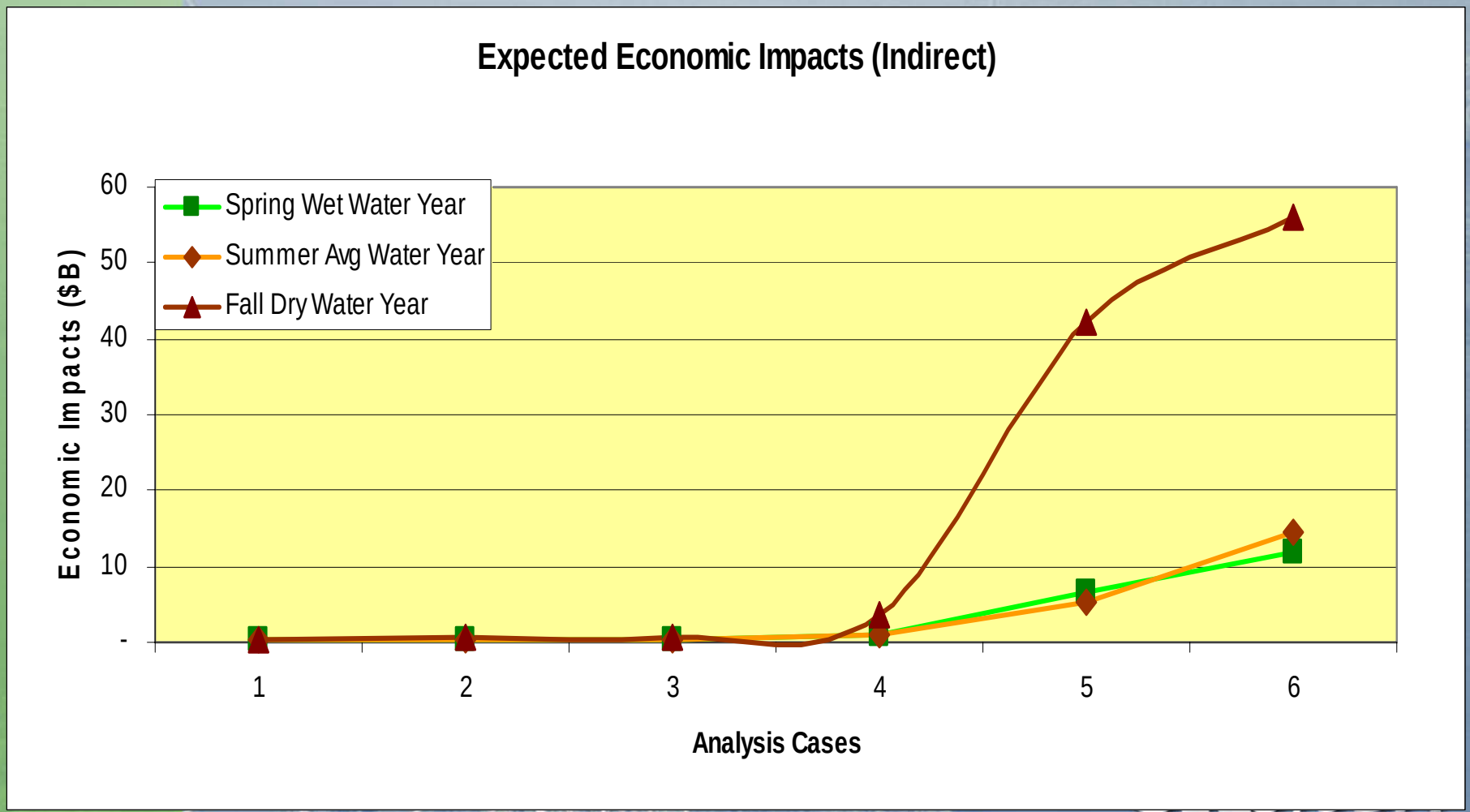


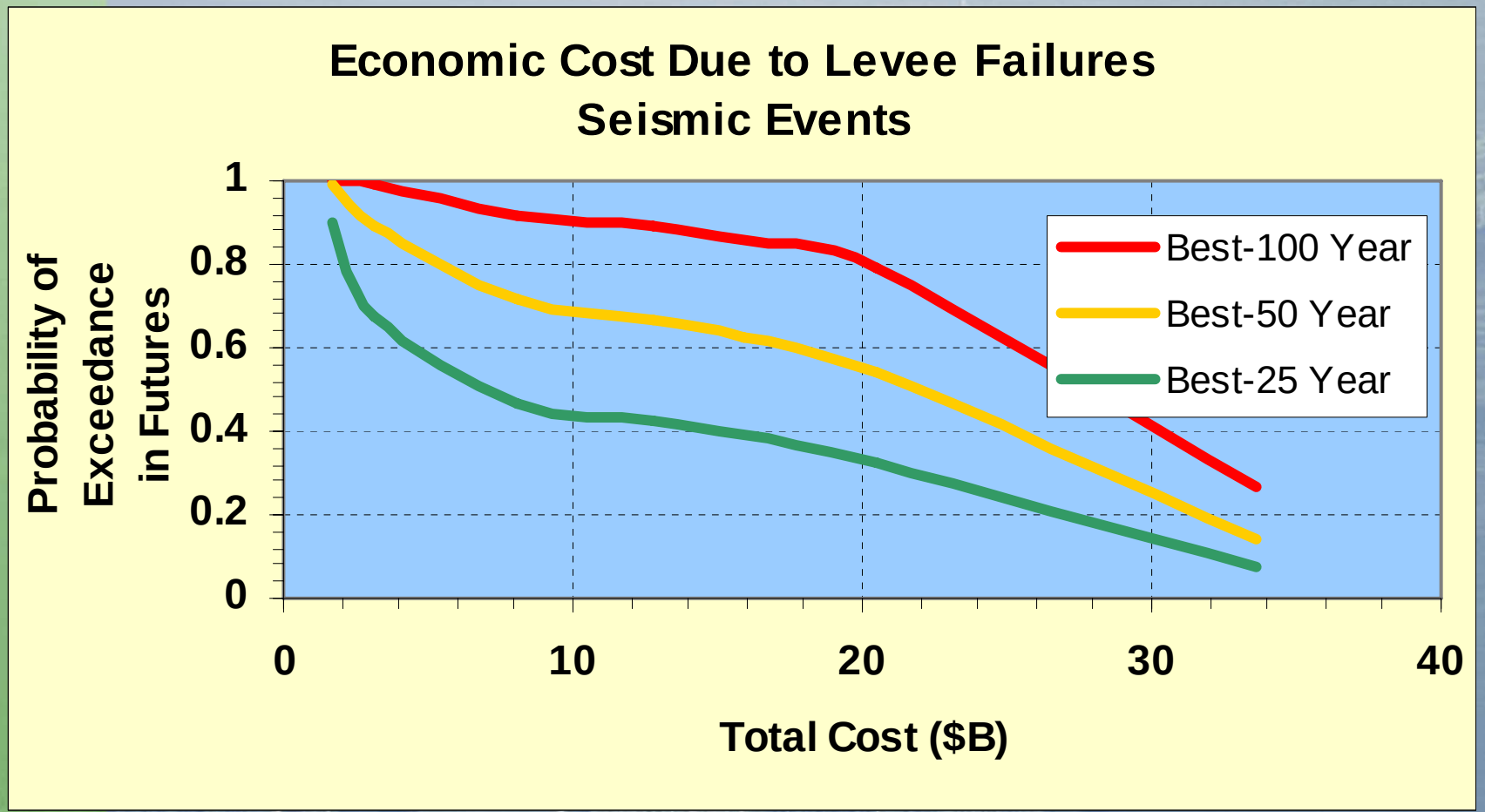
URS/JBA

Expected Economic & Financial Costs ($B)

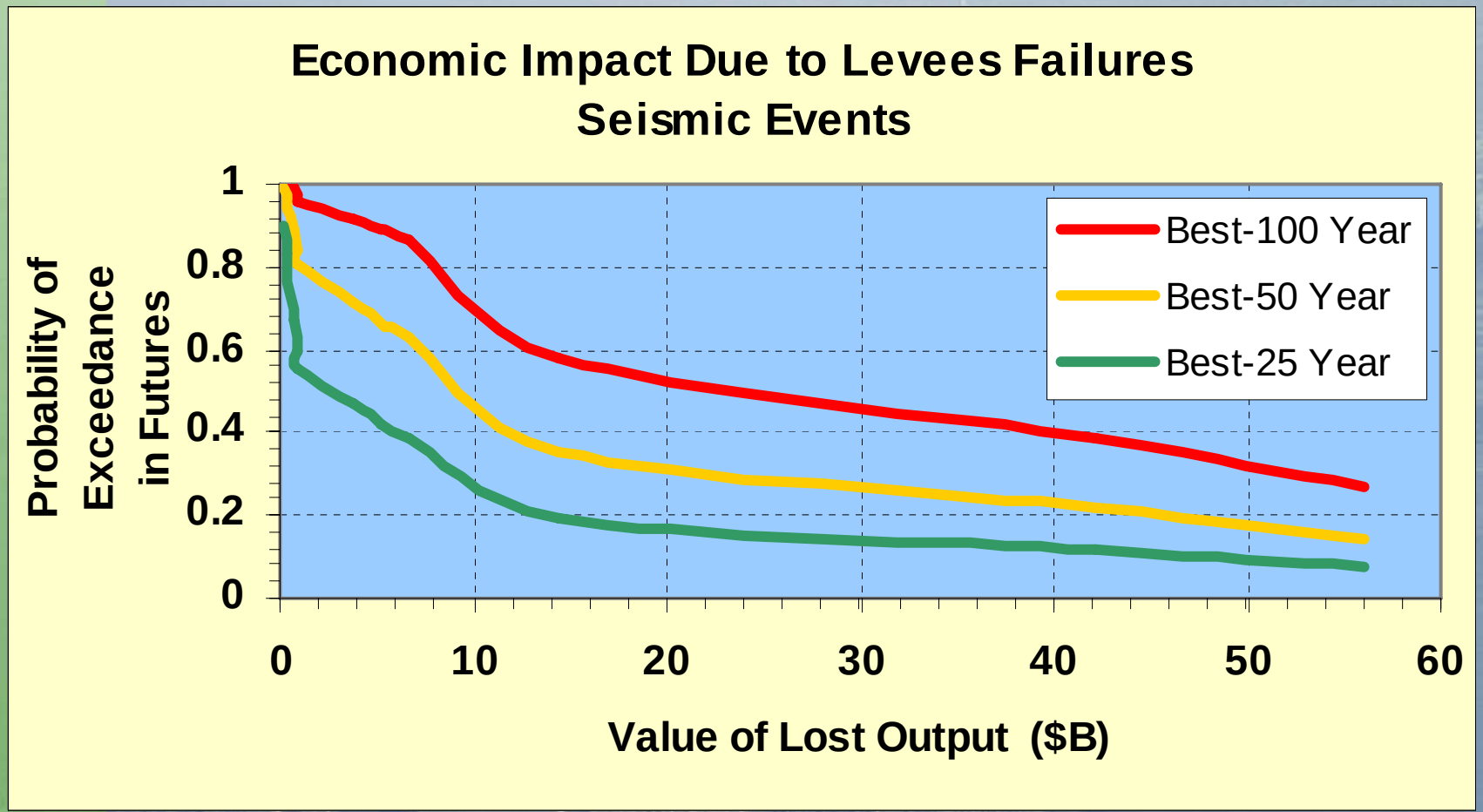


Expected Economic Impacts ($B)




Economic Cost Due to Levee Failures
Seismic Events
Probability of Exceedance in Futures
1
0.8
0.6
0.4
0.2
0
0
10
20
30
40
Total Cost ($B)
Best-100 Year
Best-50 Year
Best-25 Year

URS/JBA


Economic Impact Due to Levees Failures
Seismic Events
Probability of Exceedance in Futures
1
0.8
0.6
0.4
0.2
0
0
10
20
30
40
50
60
Value of Lost Output ($B)
Best-100 Year
Best-50 Year
Best-25 Year

URS/JBA

Summary of Key Findings

- The expected mean number of island failures is about 209 in 100 years
- The largest number of simultaneous island failures during flood events is estimated to be about 12 to 15
- There is about 28% chance of 30 or more islands failing simultaneously during a major earthquake in the next 25 years

URS/JBA

Summary of Key Findings

- There is a 75% chance of a moderate (M6 to M6-1/2) earthquake in the next 25 years
- There is a 28% chance of a large (M>7) earthquake in the next 25 years
- Contributing Sources: Hayward, Midland, San Andreas faults

URS/JBA

Summary of Key Findings

- Future flood risk will likely increase the probability of island flooding by 10% in 2050 and 24% in 2100
- Future seismic risk will likely increase the probability of island flooding by 12% in 2050 and by 27% in 2100
- Sea Level rise of 3 feet would push the salt line about 3 miles to the east

URS/JBA


Thank You
URS/JBA